Radio Shack®

MICROCOMPUTER NEWSLETTER

700 One Tandy Center
Fort Worth, Texas 76102

DEC. 1979

PRICES MAY VARY AT INDIVIDUAL STORES AND DEALERS

Seasons Greetings from all of us at Radio Shack to all of you!

Fort Worth Scene

As we come to the close of another year we would like to look back at some of the changes which have come about in this year.

One way these changes can be measured is by comparing this year's computer catalog RSC-3 with last year's, RSC-2. In RSC-2 we listed 11 business related programs, RSC-3 has 24. RSC-2 listed 4 utility programs, RSC-3 has 6. RSC-2 had 2 personal programs, RSC-3 has 5. RSC-2 listed 7 educational programs, we now list 9 with more just around the corner! RSC-2 had 11 games, RSC-3 has 13. Communications packages remained at one in both catalogs. These additions to the software line represent a 62% increase. Over 80% of the programs listed in RSC-3 are available NOW. The rest will become available over the next few months.

Hardware prices have dropped. Our 4K Level I (26-1051) dropped from $599 to $499, while our 16K Level II (26-1056) dropped from $988 to $849. We have added two new printers, Line Printer II (26-1154) and Line Printer III (26-1156). We also gave you the ability to run printers using a Level II computer without an Expansion Interface, a minimum savings of $240 for those of you who do not plan on moving up to Disk systems.

We also introduced our all new Model II microcomputer in the last year. The Model II with a single 8" Disk drive and 32K memory is only $3450. This gives you over 480 thousand bytes of disk storage at a very low price.

We look forward to the new year. We already know of new products which will be available — products not mentioned in RSC-3. These include both hardware and software. We think you will like what is going to come out in 1980. And we look forward to writing a column like this next year, because there will be new products out which are not hinted at now. I can hardly wait...

Model II Users Note

Our Model I Double Precision Subroutine Package (26-1704, $9.95) can give you double precision functions! No, you cannot load them from tape, but the manual contains source listings for the routines, which allow you to put them into your programs as subroutines. This is a fast, inexpensive solution for those of you who need double precision functions. Elsewhere in this Newsletter we describe the method of using this package to get double precision exponentiation.

Holiday Schedule

Computer Services will be OPEN for phone calls the Saturday prior to Christmas and the Saturday prior to New Years. They will be closed Christmas Eve, Dec. 24, 1979; Christmas Day, Dec. 25, 1979; New Years Eve, Dec. 31, 1979; and New Years Day, Jan. 1, 1980.

Note to Disk Payroll Users:

A diskette containing updated W-2 form and Earned Income Credit information for our Disk Payroll Program (26-1556) is available from National Parts. The Stock Number is ACT-0111 with a suggested retail price of $9.50. This diskette can be ordered through any Radio Shack Store.

COMPUTER SERVICES ADDRESS AND PHONE NUMBERS

Computer Services
900 Two Tandy Center
Ft. Worth, Texas 76102

Computer Services
Phone Numbers:

1-800-433-1679 (WATS except Texas)
1-800-772-5914 (WATS inside Texas)
1-817-390-3583 (Switchboard)

All TRS-80 related calls and mail should be directed to the above address, or one of the above phone numbers. Computer Services is staffed with knowledgeable people who are there to answer your questions. If they do not have an immediate answer, they have the internal contacts to get the answers in a minimum amount of time. Questions sent to the Newsletter must be sent to Computer Services via internal mail, which delays your response.

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User Programs and Hints

Screen Print Routine, Revisited

Jay Reso of Metairie, La. suggests the following routine for printing the contents of the video display to a lineprinter:

```
1000 DIM S$(15)
1010 FOR T=0 TO 15
1020 S$(T)=""
1030 POKE VARPTR(S$(T)),64
1040 POKE VARPTR(S$(T))+1,
     (T*64+15360) AND 255
1050 POKE VARPTR(S$(T))+2,
     (T*64+15360) /256
1060 NEXT T
1100 FOR T=0 TO 15:LPRINT S$(T):
     NEXT
```

Line 1020 establishes S$(T) with a location in memory. Line 1030 sets the length of the string to 64 bytes. Lines 1040 and 1050 set the string pointer to the location of the first byte of a video line.

Once you have executed lines 1000-1060, you can execute 1100 at any time and you will get a printed copy of the screen. Remember that you cannot print graphic characters (See Nov. Newsletter for routines to print graphics) to a lineprinter. One other caution is that you may not ASSIGN values to the strings S$(T). If you try to assign values to these strings, you will reset the pointers and you will have to rerun lines 1000-1060.

Screen Print to Tape

It has come to our attention that not all of you have lineprinters!! And, it seems, some of you would like to be able to save those wonderful video graphics even though you haven't saved quite enough for that printer (Santa Claus — are you listening?).

Jay Hass of Plano, Il. sent us the following routine which will save both alphanumeric and graphic information onto tape. His routine reads video memory, converts the information to string values and stores the strings on tape. This allows you to create a graphic design like a bar graph, include labels and comments on the screen and save them both onto tape at the same time!

```
30000 '** EDITOR/STRING DUMP
      ROUTINE **
30010 CLEAR 256
30020 FOR X= 15360 TO 16383
30030 G= PEEK(X)
30040 POKE X,191
30050 POKE X,G
30060 IF G=44 THEN POKE X,95 ELSE
      IF G=58 THEN
      POKE X,94
30070 NEXT X
30080 FOR T=15360 TO 16256
      STEP 128
30090 FOR X=T TO (T+127)
30100 B$=B$+CHR$( PEEK( X))
30110 POKE X,32
30120 NEXT X
30130 PRINT#-1,B$
30140 B$=""
30150 NEXT T
30160 RETURN
30170 '*SCREEN IS NOW ON
      CASSETTE TAPE*

40000 '** REASSEMBLER/EDITOR
      ROUTINE **
40010 CLS
40020 FOR X=1 TO 8
40030 INPUT#-1,B$
40040 IF X=8 THEN PRINT LEFT$(B$,
      127); ELSE PRINT B$;
40050 NEXT
40060 FOR X=15360 TO 16383
40070 G=PEEK(X)
40080 POKE X,191
40090 POKE X,G
40100 IF G=95 THEN POKE X,44 ELSE
      IF G=94 THEN POKE X,58
40110 NEXT X
40120 RETURN
```

Lines 30020-30070 scan video memory converting commas to an underline and colons to a right arrow. This permits the program to store two lines of the video in each string variable. Lines 40060-40110 restore the commas and colons after you have reloaded the data from tape.

Christmas Tree

This program was submitted by Gary Akins, Jr. We made minor modifications to allow the program to run in either Level I or Level II. If you have Level I, change line 10 to read: 10CLS This is the only change that needs to be made. Have fun!

```
  0 REM ********************************
  1 REM * THIS PROGRAM PRINTS
    A GRAPHIC TREE ON THE
    SCREEN *
  2 REM * AND FLASHES SOME
    STARS AND CHRISTMAS
    LIGHTS 7 *
  3 REM * TIMES, WAITS, AND DOES
    IT AGAIN. *
  4 REM ********************************
  5 REM * P.S. THIS MAKES YOUR
    COMPUTER THE MOST
    EXPENSIVE *
  6 REM * CHRISTMAS ORNAMENT IN
    THE HOUSE ! ! ! *
  7 REM ********************************
  8 REM * WRITTEN BY GARY AKINS
    JUNIOR *
  9 REM ********************************
 10 DIM A(20):CLS
 20 J=64:K=64
 30 FOR S=1 TO 2
 40 FOR Y=S TO 37
 50 SET(J,Y):SET(K,Y)
 60 J=J-1:K=K+1
 70 NEXT Y
 80 J=64:K=64
 90 NEXT S
100 FOR X=27 TO 101: SET(X,38):
    NEXT X
110 FOR Y=39 TO 47: SET(54,Y):
    SET(74,Y): NEXT Y
120 FOR X=54 TO 74: SET(X,47):NEXT
    X
150 FOR D=1 TO 20
160 READ A(D)
180 NEXT D
190 DATA 50,57,65,96,41,94,54,74,63,36
200 DATA 87,89,79,87,74,48,56,97,73,60
210 FOR F=1 TO 7
220 D=0
230 FOR Y=20 TO 40
240 D=D+1
250 K=A(D)
260 SET(K,Y)
265 IF D=20 THEN 280
270 NEXT Y
280 D=0
290 FOR Y=1 TO 20
300 D=D+1
310 K=A(D)
320 SET(K,Y)
330 NEXT Y
340 D=0
350 FOR Y=1 TO 20
360 D=D+1
370 K=A(D)
380 RESET(K,Y):RESET(K,Y+10)
390 NEXT Y
400 D=0
410 FOR Y=20 TO 40
420 D=D+1
430 K=A(D)
440 RESET(K,Y)
445 IF D=20 THEN 460
450 NEXT Y
460 NEXT F
470 FOR X=1 TO 500:NEXT X
480 RESTORE:CLS:GOTO20
```

Teacher Aide

Teacher Aide is designed to reduce the burden of paperwork that is usually associated with the teaching profession. Teacher Aide will calculate student grades, assign classroom seats, keep track of absences, tardies, overdue books, and report cards. It will also maintain an up-to-date student personal information file.

Teacher Aide will store information on a per class basis. Up to 35 students per class can be filed on small, easy to use cassette tapes. To use Teacher Aide, you merely play back the student tape into the computer to display all the student class information. You can then rearrange the classroom seating, enter raw scores, convert raw test scores into A, B, C, D, F grades, add grades to a cumulative total and then record (or save) all the new data back onto the cassette.

Teacher Aide provides a unique "percentile" grading feature that lets you see a student's standing, in terms of the percentage of individuals below the student. This feature allows you to compare classes to determine the student grade distribution in each class. For 16K, Level II. ***26-1713*** ***29.95***

I. Q. Builder

Looking for a New Job?
Trying to Get a Promotion?
Want to Get Into a Good College?
Tired of Not Understanding?

Radio Shack does not have the magic key, but we can help. With more and more companies going to pre-employment tests, and batteries of tests for promotions, you need to feel comfortable taking multiple choice tests. You should also be aware of the types of questions you may be asked, as well as have a way of solving problems.

I.Q. Builder contains over 30 programs designed to build, or reinforce, an individual's vocabulary and problem solving skills. Most exercises are presented in a multiple choice format, as they are normally found on this type of test. The three problem sets are Analogies, Number Series, and Vocabulary Builder.

Analogies are covered in six lessons with 27 different analogy types. A mastery test is included.

Number Series consists of eight programs designed to help you learn how to solve numeric patterns. Again, a final test is included to allow the individual to check on skill mastery.

Vocabulary Builder covers synonyms and antonyms. The Part I material is relatively easy. The Part II material contains significantly more difficult material.

IQ Builder includes tapes for both Level I and Level II 4K Model I TRS-80's. Level II programs may have fewer problems than corresponding Level I programs. The level and quality of the programs are the same, Level II just doesn't have as much memory available as Level I. ***26-1706*** ***29.95***

Disk Editor/Assembler

Radio Shack's Model I TRS-80 DISK EDITOR/ASSEMBLER package includes everything the experienced Assembly language programmer needs to create, compile, and execute Z-80 or 8080 Assembly Language Programs.

The DISK EDITOR/ASSEMBLER PACKAGE consists of:

1. EDIT-80 (EDIT) and EDIT-80 User's Manual
2. MACRO-80 (M80) and MACRO-80 User's Manual
3. LINK-80 (L80) and LINK-80 User's Manual
4. FORTRAN Subroutine Library (FORLIB/REL)
5. CREF-80 (CREF80) Cross Reference Facility
6. Z-80 Instruction Set and Appendix

Format

The DISK EDITOR/ASSEMBLER Package comes complete in a deluxe three-ring binder with two program diskettes and all manuals.

Minimum Hardware Required

- Level II TRS-80 with 16K RAM
- Expansion Interface with 16K RAM
- One Disk Drive (two preferred)

Detailed Description

The DISK EDITOR/ASSEMBLER Package will allow the experienced Assembly Language Programmer to write programs using either Z-80 or 8080 mnemonics. Your Assembly language programs are created using the powerful EDIT-80 text editor. Object Code is compiled using MACRO-80. This powerful assembler creates absolute or relocatable code. MACRO-80 contains 25 pseudo-ops which allow a wide variety of assembly control, including conditional (IF-ELSE), numeric bases (RADIX) from 2 to 16, COMMON (memory blocks which are compatable with the FORTRAN COMMON statement), Z-80 or 8080 opcodes, and more. The LINK-80 Linking Loader is used to load object code, needed library routines and either execute your program, or create a TRSDOS executable file. The CREF-80 Cross Reference Facility provides you with a listing file in which each source statement contains a cross reference number. In addition an alphabetical listing of variable names with a list of line numbers which reference those variables is provided.
26-2202 ..... ***99.95***

NOTE: Some items available on special order only from most stores.

Disk Payroll System

The TRS-80 Model I Disk Payroll System is designed to simplify the payroll process.

Payroll System Features

- Calculates and Prints payroll checks automatically
- Calculates all Federal Taxes in all States and the District of Columbia
- Calculates State Tax in all States and the District of Columbia
- Automatic Printing of W-2 forms at the end of the year
- Fourteen User-Defined Earnings and Deduction Categories
- Six User-Defined Workman's Compensation Classifications
- Up to 99 Employees
- Provision for Automatic Voluntary Deductions, such as Savings, Christmas Clubs, etc.
- Automatic Check Register before or after printing
- Easy Error correction and recovery
- Automatic Out-of-Balance detection
- Automatic Monthly, Quarterly, and Annual Journals

Minimum System Requirements

- TRS-80 16K Level II System
- TRS-80 16K Expansion Interface
- Two TRS-80 Model I Disk Drives
- 80 column printer such as our
  Line Printer I or
  Line Printer III
- TRS-80 Printer Cable

Our Disk Payroll System manual will take you, step by step, through the process of setting up the system to fit YOUR business. Once this is done, system maintenance is minimal. You can Add and Delete employees easily; make wage changes quickly; print any reports that may be needed; and prepare payroll checks in a fraction of the time it takes to prepare them by hand. You can print a check for a single employee or you can print all of the checks. The system will also allow you to hand write a check and then enter the information into the system at a later time. ***26-1556*** ***199.95***

Business Mailing List

The Radio Shack Business Mailing List System is a fast storage and retrieval system for names and addresses. The system provides two formats, compressed and expanded. Other features include:

- Automatically sorts records in alphabetical and zip code order
- Rapid access to any name on record
- Easy error correction and recovery
- Print listings and mailing labels
- Print your own return address labels
- Revise or update any information at any time

Minimum System Requirements:

- 16K Level II Computer System
- 16K Expansion Interface
- Two Model I Disk Drives
- TRS-80 Line Printer such as: Line Printer I or Line Printer III
- Appropriate Printer Cable

System Capacities:

COMPRESSED FORMAT
990 names with the minimum system
1980 names with 32K RAM and 3 Disk Drives
2970 names with 48K RAM and 4 Disk Drives

EXPANDED FORMAT
660 names with the minimum system
1320 names with 32K RAM and 3 Disk Drives
1980 names with 48K RAM and 4 Disk Drives

The Radio Shack Business Mailing List System permits you to define up to eight Categories for creation of selected mailing lists. Each Person in your list can belong to any number of these Categories, or none of them. These categories can be used one at a time, or together to give you lists which contain exactly the names you want. ***26-1558*** ***99.95***

Manufacturing Inventory Control

The Radio Shack Manufacturing Inventory Control System is designed to help reduce the time and expense of inventory control. This system will help control Raw Materials, Finished Goods, and assist in planning material requirements.

Minimum System Requirements

- 16K Level II Computer System
- 16K Expansion Interface
- Two Model I Disk Drives
- 132 Column Printer such as our Line Printer III
- Appropriate Printer Cable

With the minimum system, you can handle up to 1700 Raw Materials. With four disk drives and a 32K Expansion Interface, capacity increases to 5700 Raw Materials. Each Program Diskette can handle up to 20 Finished Goods. If you have more than 20 Finished Goods, you simply use multiple copies of the program diskette.

Reports and Lists Printed by the system include:

Raw Materials Inventory Report
Bill of Materials
Pull Sheets
Finished Goods List
Out-of-Stock Reports
Inventory Worksheets
Raw Materials Use Reports
"Where Used" Reports

The Radio Shack Manufacturing Inventory Control System keeps track of stock numbers, descriptions, locations, units of measure, unit costs, and quantity of hand for each Raw Material item in your inventory. The system automatically keeps track of whether a Raw Material item is being used in the manufacture of a Finished Good. Of course you can add Raw Materials or delete inactive Raw Materials whenever you need to. Cost and quantity updates are very easy. Each Finished Good can be made from as many as 600 Raw Materials. The exact materials which make up a Finished Good can be changed as needed.
26-1559 ..... ***199.95***

TRS-80™ PRODUCT NEWS

TRS-80

BASIC Coding Form

Radio Shack

TITLE _____ PROGRAMMER _____ COMMENTS _____ PAGE ___ OF ___

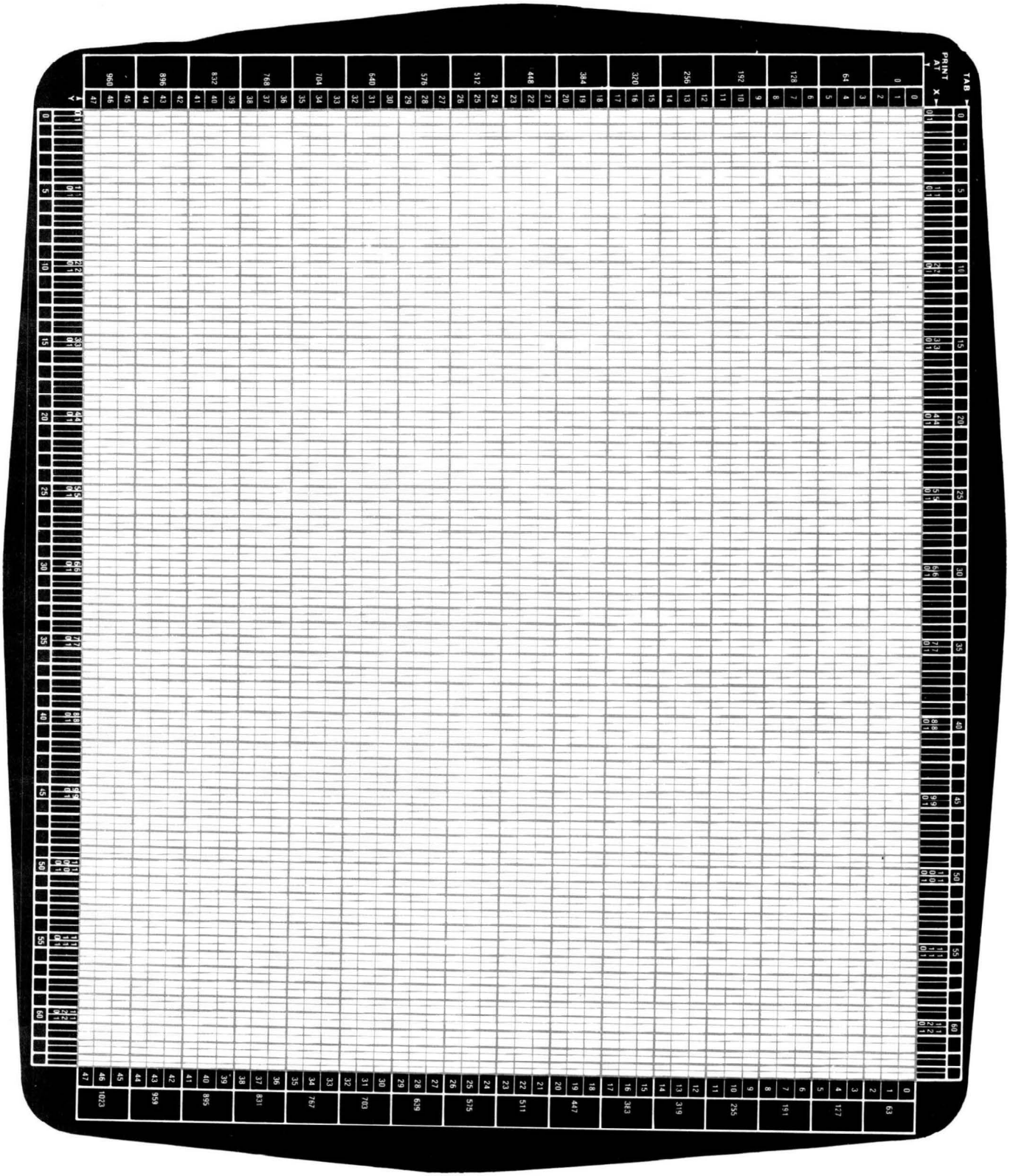
LINE NO.

VARIABLE LIST / COMMENTS

TRS-80 Video Display Worksheet

Radio Shack

TITLE _____ PROGRAMMER _____ PAGE ____ OF ____



TRS-80 Video/Programming Worksheets give you a Model I screen layout for designing graphics and finding print locations. The reverse side is a programming worksheet with space for variable names and comments. 100 sheets per package.

26-2105 ..... **2.95**

Microcomputer Newsletter Cumulative Index

This cumulative index covers all Microcomputer Newsletters published from the first volume in 1977 to Volume 1, Number 10, December, 1979. Page numbers preceded by the letter A are advertising insert pages. These pages began in November, 1979.

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PLEASE NOTE THAT OUR SUPPLY OF BACK ISSUES HAS BEEN DEPLETED

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Double Precision Exponentiation

If you work with double precision numbers, you have probably wished that exponentiation were a double precision function. You can easily make it one using our Double Precision Subroutine Program (26-1704, $9.95).

The Double Precision Subroutine Program provides you with Natural Logarithm and Exponential functions. Using these functions and the following formula will give you double precision exponentiation:

B# is the base number
P# is the power

EXP(LOG(B#)*P#) IS THE RESULT

If B# = 5 and P# = 5 then EXP(LOG(B#)*P#) = 3125, which is 5 raised to the 5th power.

Likewise, if B# = 3125 and P# = .2 then EXP(LOG(B#)*P#) = 5. The following subroutine used with our Double Precision Subroutine Program will give double precision exponentiation:

```
1000 DEFDBL Z
1010 INPUT"BASE NUMBER";B#
1020 INPUT"POWER       ";P#
1030 Z=B#
1040 GOSUB 40100
1050 Z=Z2 * P#
1060 GOSUB 40200
1070 PRINT"THE RESULT IS";Z2
1080 RETURN
```

You should remember two things while using this subroutine. First, the more accurate you make B# and P#, the more accurate your results will be. Second, make the correction to line 40100 in the Double Precision Subroutine Package. This line should read:

```
40100 Z2=LOG(Z): I0=0: IF Z<1 THEN
      I2= -1: Z=1/Z ELSE I2=1
```

Note to Level I Users:

The Level I Users Manual contains similar routines in Appendix A.

Shell Sort Routine

If you have been using our MAINLINE SORTING DRIVER from the November 1978 Newsletter, or some other form of ripple, bubble sort, you should find this sort to be much faster. This version of the Shell-Metzner sort will work in either Level II or DISK BASIC. For Level II operation, delete lines 500-540.

Our thanks to Emil Raabe of Arlington, TX who submitted a similar program.

```
 10 CLOSE:CLS:CLEAR 12000 :REM
    CHANGE CLEAR TO FIT MEMORY
    SIZE
 20 DIM A$(1000):REM CHANGE DIM
    TO FIT MEMORY. A$( ) HOLDS
    STRINGS TO BE SORTED.
 30 LAST=1
 40 PRINT LAST;:INPUT A$(LAST):
    REM INPUT STRINGS TO BE
    SORTED
 50 IF A$(LAST)="" THEN 100
 60 LAST=LAST+1
 70 GOTO 40
100 M=LAST
120 M=INT(M/2)
130 IF M=0 THEN 400
140 J=1:K=LAST-M
150 I=J
160 L=I+M
170 IF A$(I)<=A$(L) THEN 220
175 PRINT@ 200,I,L,M
180 T$=A$(I):A$(I)=A$(L):A$(L)=T$
190 I=I-M
200 IF I<1 THEN 220
210 GOTO 160
220 J=J+1
230 IF J>K THEN 120
240 GOTO 150
400 FOR I=1 TO LAST
410 PRINT A$(I)
420 NEXT
500 OPEN"0",1,"SORTLIST"
510 FOR I=1 TO LAST
520 PRINT#1,A$(I)
530 NEXT
540 CLOSE
550 END
```

Level II Manual, Second Edition

The Level II manual, Second Edition, is now being shipped with new computers, and may be available in some stores. As with most publications, there are a few errors, some of them carried forward from the First Edition. If you have a Second Edition manual, please make note of the following pages and errors.

3/6 Assuming each line on the page is numbered, the following errors exist:
line 3 — Second quote mark should come after the pound signs (#) and before the comma.
line 10 — A blank should be included after 12.12 and before the period.
line 14 — Delete the space between asterisk and 12.
line 20 — change period to a comma.
last line on page — ADD another line reading ABCD

3/12 In the Special Note, third line, the word PRINT left out.

4/17 line 20 of example program: first colon should be a semi-colon.

A/7 The comma field specifier is missing.

A/16 In the list of RESERVED WORDS, RUN and SYSTEM are missing.

Programming Tip #5

Jay Reso reminded us that with the Model I TRS-80, you can "direct" your outputs. If you want everything which is supposed to go to the lineprinter to be sent to the video, execute the following:

POKE 16422, 88:POKE 16423, 4

To restore the lineprinter use:

POKE 16422, 141:POKE 16423, 5

If you want everything which is supposed to go to the video sent to the lineprinter, use:

POKE 16414, 141: POKE 16415, 5

To restore the video use:

POKE 16414, 88: POKE 16415, 4